

## BURLINGTON



## DEPARTMENT

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Via email [doer.rps@state.ma.us](mailto:doer.rps@state.ma.us)

Robert Sydney, Esq.  
General Counsel  
Massachusetts Division of Energy Resources  
100 Cambridge Street  
Suite 1020  
Boston, MA 02114

Re: Massachusetts RPS Comments

Dear Mr. Sydney:

The Burlington Electric Department owns and operates the McNeil Generating Station in Burlington, Vermont in joint ownership with Central Vermont Public Service Corp., Green Mountain Power Corp., and Vermont Public Power Supply Authority. McNeil Station is the largest wood fired electric generating station in New England, with an output of 54 mw net. Burlington Electric Department appreciates the opportunity to submit comments and suggested changes to the proposed Massachusetts Renewable Portfolio Standard (RPS) guidelines and standard issued on June 2, 2006.

### Construction and Demolition Wood Fuel

The proposed standard includes construction and demolition (C&D) wood as an eligible biomass fuel in the definitions in section 14.02. C&D is a broad category, which includes everything from clean untreated dimension lumber to roof panels with lead paint, lead flashing and asphalt shingles. McNeil has allowed trial loads of "clean, sorted C&D wood", only to find what actually was delivered was largely trash and contaminated wood. In most cases, this material was rejected and sent back to the supplier.

Allowing C&D wood fuel negates many of the benefits biomass plants provide. Burning contaminated wood Biomass plants are not usually equipped with scrubbers to remove gaseous emissions in the flue gas. We are not aware of any existing biomass plants equipped with continuous emission monitors to determine the quantities of emissions in the flue gas from contaminants in C&D wood. The proposed standard does not require plants have these monitors. Burning contaminated wood also contaminates the ash from the plant. The ash from most biomass plants is currently used for beneficial uses such as soil amendments or road construction aggregate. In most cases, burning C&D would prevent the ash from being used for beneficial purposes.

We recommend that (C&D) wood be removed from the definition for Eligible Biomass Fuel. As an alternative, an additional definition could be added as follows:

C&D Wood. C&D wood may be used as an Eligible Biomass Fuel if it is clean, unpainted wood with no contaminants or adhesives.

### Stoker Technology

The proposed standard removes the language prohibiting stoker technology for new and vintage plants. This is a major improvement to the standard. Stoker technology has improved over the years like the automobile engine has improved. Stoker plants can operate as efficiently and cleanly as their fluid bed counterparts, and are typically more reliable and less costly to build and operate.

In the recently released Annual RPS Compliance Report for 2004, less than 2/3 of the required 1.5% of retail load sold from renewable sources was actually met from eligible plants. There is clearly a shortage of eligible plants which is causing the cost of Massachusetts RPS Renewable Energy Credits (RECs) to be artificially high with limited ability to increase the supply. Including clean stoker biomass plants can improve the supply of eligible credits in two ways:

The very limited number of existing biomass plants that can benefit from the vintage waiver can make modifications and increase the supply of eligible supply in a relatively short time frame. This would have a relatively quick reduction in the cost of Massachusetts RECs without flooding the market.

New biomass plants will now have the option to build stoker technology plants. The lower plant cost and higher reliability will provide long term relief to the high REC prices.

### Carbon Monoxide Monitoring

The proposed guideline has strict limits for particulate emissions for eligible plants in Table 1 on page 4. Under the Emissions Monitoring, Reporting and Enforcement section on page 7, the guideline requires eligible plants to monitor carbon monoxide (CO) emissions as a "surrogate limit for PM." While CO emissions give some indication of the uncontrolled particulate emissions leaving the boiler, any biomass plant eligible for the Massachusetts RPS would have a high efficiency particulate collection system. CO monitoring would give no indication of actual particulate emissions from the chimney.

We would suggest a couple of options.

If the plant operating permit requires particulate levels at or lower than the Massachusetts RPS requirement, plants can submit a copy of the permit to the DOER and let the state air quality agency enforce compliance.

If the plant operating permit has a higher particulate emission limit than the Massachusetts RPS requirement, annual particulate testing is required. Biomass plants are required to have a Title V Operating permits. We believe all the Title V operating permits have Continuous Assurance Monitoring (CAM) requirements to ensure the particulate removal equipment is operating as required. It may be advisable for DOER to review plant CAM requirements and determine if that gives proper assurances.

#### Changes to emission limits

On page 5 of the guidelines, it states that "Over time, the emission limits of Table One will be lowered." The guideline does not specifically state that once a plant is deemed eligible under the appropriate guideline, that guideline is in effect for the life of that plant.

We recommend that the guideline have language similar to that in the revised standard in section 14.05(1) (a)(6)(b) stating that a plant must meet "the Guidelines that are applicable for the date on which the Division receives the Unit's Statement of Qualification application."

#### Heat Rate

On page 13 of the guidelines, it states that "DOER will use the target values in Table Three below to evaluate the plant's net heat rate at a standard fuel moisture specification of 45%." When the Massachusetts lawmakers enacted the legislation that required high efficiency plants for biomass, McNeil was the host facility for the Vermont Gasification Project. This was a USDOE demonstration project that was thought to revolutionize the way power was made from biomass. After 5 years of efforts, the gasifier is dormant and never demonstrated the high efficiency conversion that was hoped for. This project created false hopes for potential near term efficiency improvements in biomass plants. There are many benefits to wood fired plants which are still valid if the plant is slightly less efficient than other generation sources. What photo voltaic or landfill gas plants could meet a competitive heat rate standard? Heat rate in a biomass plant changes by the minute based on moisture content, and is very difficult to determine. A more meaningful measure would be to have an emission standard on a lbs/net mwh basis, which incorporates the emissions and the plant efficiency in one step and is measurable. I'm not aware of any other biomass plant that has done heat rate tests other than McNeil.

Due to high moisture content in the fuel, small plant size, and high parasitic load, biomass plants have not been and may never be as efficient as many other forms of power generation, but that is not their strongpoint. It makes sense to allow only the more



efficient biomass plants to be eligible for Massachusetts RPS, but if a heat rate target is used, it should be attainable. Plants should also have to demonstrate a qualifying heat rate by testing. It is not appropriate to use engineering estimates to qualify a given plant's heat rate values for the RPS instead of actual tests. Calculated values may vary significantly from actual operation based on fuel moisture content, plant modifications, and operating practice. Plant heat rates generally degrade with time due to increased turbine clearances and boiler deposits.

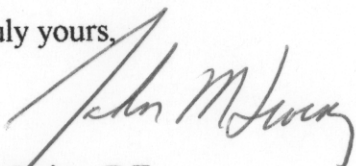
Table Three indicates that in all cases, the stoker plant must be significantly more efficient than a fluidized bed plant. We are not aware of any existing stoker plant that can meet the target heat rate. A heat rate requirement of 14,000 btu/net kWh would allow only the most efficient biomass plants to comply. If DOER truly wants to encourage more efficient biomass plants, why is one technology allowed to be less efficient than another (stoker vs. fluid bed)? The plant efficiencies of stoker plants vs. fluidized bed plants are comparable. Stoker boilers have slightly lower boiler efficiencies due to higher carbon carryover, but fluidized bed units compensate for this by having higher parasitic power requirements.

There are limited technical changes you can make to improve the efficiency of a biomass plant. The economies of scale are not available with small plants to allow ultra high pressure systems with many stages of feedwater heating like in a large central station. One way to improve the efficiency of biomass power plants, is to dry the fuel using energy from the flue gas. The requirement on page 13 that the target be adjusted to 45% moisture fuel prohibits this, unless it is clarified that the 45% level is the moisture content when the fuel arrives on site, not as it enters the boiler.

We recommend that if there must be a heat rate target for biomass plants equal to or greater than 25 mw net output, it should be 14,500 btu/net kWh, as demonstrated by an annual compliance test. A preferable alternative would be to have a NOx limit of 0.9425 lbs/net mwh and a particulate limit of 0.174 lbs/net mwh.

The Burlington Electric Department wishes to thank the DOER for the opportunity to comment on the proposed guidelines and standard. If there are any questions on the above, I can be reached directly at 802-865-7482 or by email at [jirving@burlingtonelectric.com](mailto:jirving@burlingtonelectric.com).

Very truly yours,



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